

# Dr. Yunlong Wang

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## Research Interests

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Pattern Recognition, Machine Learning, Light field Photography, and Biometrics.

## Academic Positions

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- **Associate Professor** since Mar. 2022  
Center for Research on Intelligent Perception and Computing (CRIPAC),  
Institute of Automation, Chinese Academy of Sciences (CASIA)
- **Assistant Professor** Jul. 2019 - Feb. 2022  
Center for Research on Intelligent Perception and Computing (CRIPAC),  
Institute of Automation, Chinese Academy of Sciences (CASIA)

## Education

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- **Doctor of Engineering** Aug. 2014 - Jun. 2019  
University of Science and Technology of China (USTC)  
Hefei, Anhui, China  
Supervisor: Prof. Tieniu Tan  
Thesis title: Light Field Image Enhancement and Recognition
- **Bachelor of Engineering (honors program)** Aug. 2010 - Jun. 2014  
University of Science and Technology of China (USTC)  
Hefei, Anhui, China  
Thesis title: Image-based Automatic Object Counting Techniques

## Projects and Funds

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- **Iris Liveness Detection and Recognition Based on Hybrid Light Field Imaging**  
Youth Fund Project of National Natural Science Foundation of China, Jan. 2021 – Dec. 2023
- **Computational Imaging Techniques for High-throughput Iris Recognition**  
General Program of National Natural Science Foundation of China, Jan. 2021 – Dec. 2024
- **Large-scale Iris Image Generation**  
General Program of National Natural Science Foundation of China, Jan. 2022 – Dec. 2025
- **Federated Learning for Biometrics Recognition**  
CAAI-Huawei Mindspore Open Fund, Jan.2022 – Oct.2022
- **Smart Iris Recognition Systems**  
Repository: <https://www.researchgate.net/project/Research-on-Smart-Iris-Recognition-systems>, since Jul. 2019
- **Computational Light Field Imaging Devices and Algorithms**  
Repository: <https://www.researchgate.net/project/Computational-Light-Field-Imaging-Devices-and-Algorithms>, since Oct. 2016

## Awards

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- Best Paper Award Runner-up, International Joint Conference on Biometrics (IJCB 2020)

## Professional Activity

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- **Reviewing**

Journals: IEEE TIP, IEEE TCI, IEEE TVCG, IEEE JSTSP, IEEE/CAA JAS.

Conferences: CVPR, ICCV, AAAI, IJCB, CCBP.

- **Organizing committee**

“NIR Iris Challenge Evaluation in Non-cooperative Environments: Segmentation and Localization” Competition at IJCB 2021

- **Invited talks**

Beijing University of Posts and Telecommunications, China.

Hosted by Prof. Zhaofeng He, Dec. 2021

Beijing Normal University, China.

Hosted by Prof. Yongzhen Huang, Aug. 2021

## Publications

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- **Journal**

- [1] Towards Interpretable Defense against Adversarial Attacks via Causal Inference.  
Min Ren, **Yunlong Wang\***, Zhaofeng He.  
Machine Intelligence Research (**MIR**), 2022.
- [2] Towards More Discriminative and Robust Iris Recognition by Learning Uncertain Factors.  
Jianze Wei, Huaibo Huang, **Yunlong Wang\***, Ran He, Zhenan Sun.  
IEEE Transactions on Information Forensics and Security (**TIFS**), 2022.
- [3] Multitask Deep Active Contour-based Iris Segmentation for Off-Angle Iris Images.  
Tianhao Lu, Caiyong Wang, **Yunlong Wang**, Zhenan Sun.  
Journal of Electronic Imaging (**JEI**), 2022.
- [4] Overview of biometrics research (in Chinese).  
Zhenan Sun, He Ran, Liang Wang, ..., **Wang Yunlong**, others.  
Journal of Image and Graphics (**JIG**), 2022.
- [5] Cross-spectral Iris Recognition by Learning Device-specific Band.  
Jianze Wei, **Yunlong Wang**, Yi Li, Ran He, Zhenan Sun.  
IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**), 2021.
- [6] CASIA-Face-Africa: A Large-scale African Face Image Database.  
Muhammad Jawad, **Yunlong Wang**, Caiyong Wang, Kunbo Zhang, Zhenan Sun.  
IEEE Transactions on Information Forensics and Security (**TIFS**), 2021.
- [7] High-fidelity View Synthesis for Light Field Imaging with Extended Pseudo 4DCNN.  
**Yunlong Wang**, Fei Liu, Kunbo Zhang, Zilei Wang, Zhenan Sun, Tieniu Tan.  
IEEE Transactions on Computational Imaging (**TCI**), 2020.
- [8] Flexible Iris Matching Based on Spatial Feature Reconstruction.  
Zihui Yan, Lingxiao He, **Yunlong Wang**, Zhenan Sun, Tieniu Tan.  
IEEE Transactions on Biometrics, Behavior, and Identity Science (**TBIOM**), 2021.
- [9] Towards Complete and Accurate Iris Segmentation Using Deep Multi-task Attention Network for Non-Cooperative Iris Recognition.  
Caiyong Wang, Jawad Muhammad, **Yunlong Wang**, Zhaofeng He and Zhenan Sun.  
IEEE Transactions on Information Forensics and Security (**TIFS**), 2020.

- [10] ScleraSegNet: An Attention Assisted U-Net Model for Accurate Sclera Segmentation.  
Caiyong Wang, **Yunlong Wang**, Yunfan Liu, Zhaofeng He, Ran He and Zhenan Sun.  
IEEE Transactions on Biometrics, Behavior, and Identity Science (**TBIOM**), 2020.
- [11] Binocular Light-Field: Imaging Theory and Occlusion-Robust Depth Perception Application.  
Fei Liu, Shubo Zhou, Yunlong Wang, Zhenan Sun, Tieniu Tan.  
IEEE Transactions on Image Processing (**TIP**), 2019.
- [12] Iris Liveness Detection Based on Light Field Imaging.  
Ping Song, Ling Huang, **Yunlong Wang**, Fei Liu, Zhenan Sun.  
IEEE/CAA Journal of Automatica Sinica (**JAS**), 2019.
- [13] LFNet: A Novel Bidirectional Recurrent Convolutional Neural Network for Light-Field Image Super-Resolution.  
**Yunlong Wang**, Fei Liu, Kunbo Zhang, Guangqi Hou, Zhenan Sun, Tieniu Tan.  
IEEE Transactions on Image Processing (**TIP**), 2018.

• **Conference full paper**

- [1] FedIris: Towards More Accurate and Privacy-preserving Iris Recognition via Federated Template Communication.  
Zhengquan Luo, **Yunlong Wang\***, Zilei Wang, Zhenan Sun, Tieniu Tan.  
Computer Vision and Pattern Recognition Workshops (**CVPRW**), 2022.
- [2] Learning Instance-level Spatial-Temporal Patterns for Person Re-identification.  
Min Ren, Lingxiao He, Xingyu Liao, Wu Liu, **Yunlong Wang**, Tieniu Tan.  
International Conference on Computer Vision (**ICCV**), 2021.
- [3] NIR Iris Challenge Evaluation in Non-cooperative Environments: Segmentation and Localization.  
Caiyong Wang, **Yunlong Wang**, Kunbo Zhang, Jawad Muhammad, Tianhao Lu, Qi Zhang, Qichuan Tian, Zhaofeng He, Zhenan Sun.  
International Joint Conference on Biometrics (**IJCB**), 2021.
- [4] A Large-scale Database for Less Cooperative Iris Recognition.  
Junxing Hu, Leyuan Wang, Zhengquan Luo, **Yunlong Wang\***, Zhenan Sun.  
International Joint Conference on Biometrics (**IJCB**), 2021.
- [5] An End-to-End Autofocus Camera for Iris on the Move.  
Leyuan Wang, Kunbo Zhang, **Yunlong Wang**, Zhenan Sun.  
International Joint Conference on Biometrics (**IJCB**), 2021.
- [6] Iris Normalization Beyond Appr-Circular Parameter Estimation.  
Zhengquan Luo, Haiqing Li, **Yunlong Wang**, Zilei Wang, Zhenan Sun.  
Chinese Conference on Biometric Recognition (**CCBR**), 2021.
- [7] A Novel Deep-learning Pipeline for Light Field Image Based Material Recognition.  
**Yunlong Wang**, Kunbo Zhang, Zhenan Sun.  
International Conference on Pattern Recognition (**ICPR**). 2021.
- [8] A Lightweight Multi-Label Segmentation Network for Mobile Iris Biometrics.  
Caiyong Wang, **Yunlong Wang**, Boqiang Xu, Yong He, Zhiwei Dong, Zhenan Sun.  
International Conference on Acoustics, Speech, and Signal Processing (**ICASSP**), 2020.
- [9] Dynamic Graph Representation for Occlusion Handling in Biometrics.  
Min Ren, **Yunlong Wang**, Zhenan Sun, Tieniu Tan.  
Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI**), 2020.
- [10] Recognition Oriented Iris Image Quality Assessment in the Feature Space.  
Leyuan Wang, Kunbo Zhang, Min Ren, **Yunlong Wang**, Zhenan Sun.

- International Joint Conference on Biometrics (**IJCB**), 2020.
- [11] All-in-Focus Iris Camera with a Great Capture Volume.  
Kunbo Zhang, Zhenteng Shen, **Yunlong Wang**, Zhenan Sun.  
International Joint Conference on Biometrics (**IJCB**), 2020.  
***Best Paper Award Runner-up***
- [12] SSBC 2020: Sclera Segmentation Benchmarking Competition in The Mobile Environment.  
Junxing Hu, Yonghe He, Caiyong Wang, Hui Liu, **Yunlong Wang**, Zhenan Sun.  
International Joint Conference on Biometrics (**IJCB**), 2020.
- [13] Alignment Free and Distortion Robust Iris Recognition.  
Min Ren, Caiyong Wang, **Yunlong Wang**, Zhenan Sun, Tieniu Tan.  
International Conference on Biometrics (**ICB**), 2019.
- [14] Cross-Sensor Iris Recognition Using Adversarial Strategy and Sensor-Specific Information.  
Jianze Wei, **Yunlong Wang**, Xiang Wu, Zhaofeng He, Ran He, Zhenan Sun.  
International Conference on Biometrics: Theory, Applications and Systems (**BTAS**), 2019.
- [15] End-to-end View Synthesis for Light Field Imaging with Pseudo 4DCNN.  
**Yunlong Wang**, Fei Liu, Zilei Wang, Guangqi Hou, Zhenan Sun, Tieniu Tan.  
European Conference on Computer Vision (**ECCV**), 2018.
- [16] A Simple and Robust Super Resolution Method For Light Field Images.  
**Yunlong Wang**, Guangqi Hou, Zhenan Sun, Zilei Wang, Tieniu Tan.  
International Conference on Image Processing (**ICIP**), 2016.
- [17] 4D Light-Field Sensing System for People Counting.  
Guangqi Hou, Chi Zhang, **Yunlong Wang**, Zhenan Sun.  
Photonic and Optoelectronic Integrated Circuits XVIII (**SPIE OPTO**), 2016.

Last updated: Tuesday, May 10, 2022